



Technology Transfer and Commercialization

Part of NASA's charter is to build partnerships and transfer the technology it develops to the private sector for applications that will benefit people throughout the nation and the world. Space-based technology has already enriched a wide range of human activities – how we communicate with one another, how we process information, how we travel, and how we study our planet's biosphere, to name a few. It has improved our quality of life by showing us new ways to treat our sick and injured, to grow our food, and even to correct our vision.

Throughout 2001, the Technology Transfer and Commercialization Office at JSC actively sought to increase its number of partnerships with the commercial sector. And we were successful: in 2001, 87 technologies were marketed to potential commercial partners. Also during the year, 23 agreements were developed and 18 technologies were licensed for beneficial commercial applications.

Our Technology Transfer and Commercialization Office vigorously markets the Center's technology to companies throughout the nation, including technologies available for licensing, research and development capabilities as well as the usage of JSC's specialized facilities. We implement NASA's directive by sharing advanced technologies and unique capabilities with U.S. business and industry.

The Technology Transfer and Commercialization Office at JSC supports a wide range of responsibilities, including technology evaluation, intellectual property, commercialization, patent licensing, joint development partnerships, Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs, grants and Space Act Agreements. These functions enable the Center to more closely align its way of doing business with that of the private sector, and to help identify the Agency's technology needs and leverage its resources.

Commercial Agreements

NASA strives to continue to develop technology with a meaningful real-life application here on Earth as well as in space. We strive to make beneficial space technologies available to the world through developmental partnerships and licensing agreements with business and industry. Below are a few examples of how we achieve our goal:

- Our technology will aid coffee growers in their search for "heavenly coffee." In cooperation with other NASA Centers, JSC will develop an unmanned aircraft, known as an "Uninhabited Aerial Vehicle" (UAV), to aid Hawaiian coffee growers by providing the growers with color images of their crops. From this information, the growers will know, down to the day, the best time for harvesting the beans, thus bringing the best flavor to consumers. As part of NASA's UAV-based science demonstration program, these flights will show the ability of this type of aircraft to carry Earth-viewing scientific payloads in long-duration missions at altitudes exceeding the endurance of a pilot in a





traditional aircraft. These capabilities will benefit both U.S. scientific and commercial objectives well into the new millennium.

- An eight-year-old boy from Magnolia, Texas, suffers from four skin diseases that kept him out of the Sun and its potentially harmful ultraviolet (UV) radiation. However, that has all changed thanks to NASA and the Hypohidrotic Ectodermal Dysplasia (HED) Foundation. In April 2001, the boy received a special UV-blocking suit that was developed from NASA space-based technology. The suit, which covers him from head to toe, allows him to go outside, protected from harmful light.
- The MicroMed DeBakey Ventricular Assist Device (VAD®) was developed in collaboration with Dr. Michael DeBakey, Dr. George Noon and a team of NASA engineers. The VAD® was created to assist patients with congestive heart failure. The tiny blood pump bridges the gap between a heart patient's need for immediate support and the availability of a donor heart. It has been approved for commercial sales in Europe and is currently being used in clinical trials in the U.S. NASA patented the invention, and the patent was licensed exclusively to a Houston company, MicroMed Technology, Inc.

As part of JSC's continuing medical device initiative, in 2002 medical technology transfers and joint development opportunities will be the focus of an event between NASA and the Houston Medical Center technology transfer community. We will have a joint targeted licensing event for medical technologies in early March 2002. This type of small, focused event, done in partnership with a local medical school, may be replicated in other parts of the country in the future.



Small Business Innovation Research and Small Business Technology Transfer

Congress established the Small Business Innovation Research (SBIR) Program in 1982 to provide increased opportunities for small businesses to participate in research and development in order to increase employment and improve U.S. competitiveness. The program's specific objectives are to stimulate U.S. technological innovation, use small businesses to meet federal research and

Beneficial Uses for NASA Space Technology

From UV-blocking fabrics to agricultural data gathering, technologies developed for exploring space find many uses on Earth.



development needs, increase private-sector commercialization of innovation derived from federal research and development, and to foster and encourage participation by socially disadvantaged businesses.

The Small Business Technology Transfer Program (STTR) awards contracts to small business concerns for cooperative research and development with a nonprofit Research Institution (RI), such as a university. The goal of the program is to facilitate the transfer of technology developed by an RI through the entrepreneurship of a small business. The groups must agree on how the intellectual property will be shared between them.



Partnering for Success

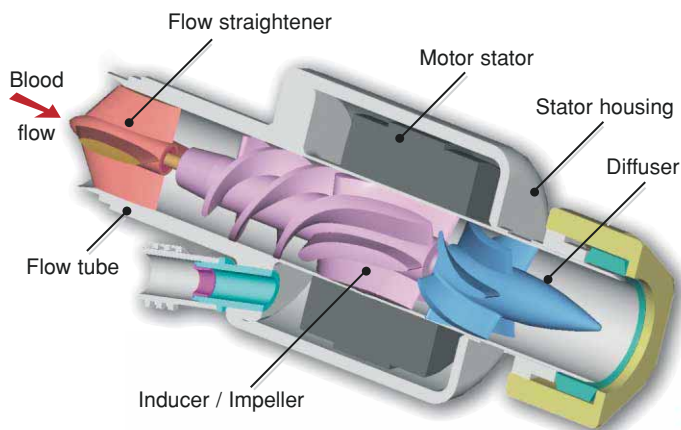
Key to JSC's technology transfer success is the partnership between the Center and its technology transfer marketing partner, the Mid-Continent Technology Transfer Center (MCTTC). The MCTTC partnership helps market NASA/JSC technologies and also aids in identifying commercial opportunities. Technology transfer includes high-effort projects, such as license agreements and Space Act Agreements, as well as direct technical assistance offered to companies with specific technical problems.

MCTTC also directly supports the JSC Commercial Technology Office in its effort to create and assess new technology submissions from inventors, to develop marketing materials for the inventions and to work to keep the technology portfolio complete and up to date.

JSC participates with Clear Lake Area Economic Development Foundation (CLAEDF) to attract space-related business and industry to hold functions or open operations in the local area. Our Technology Outreach Program in the Office of Technology Transfer and Commercialization helps small business access and use NASA technologies in beneficial commercial applications.

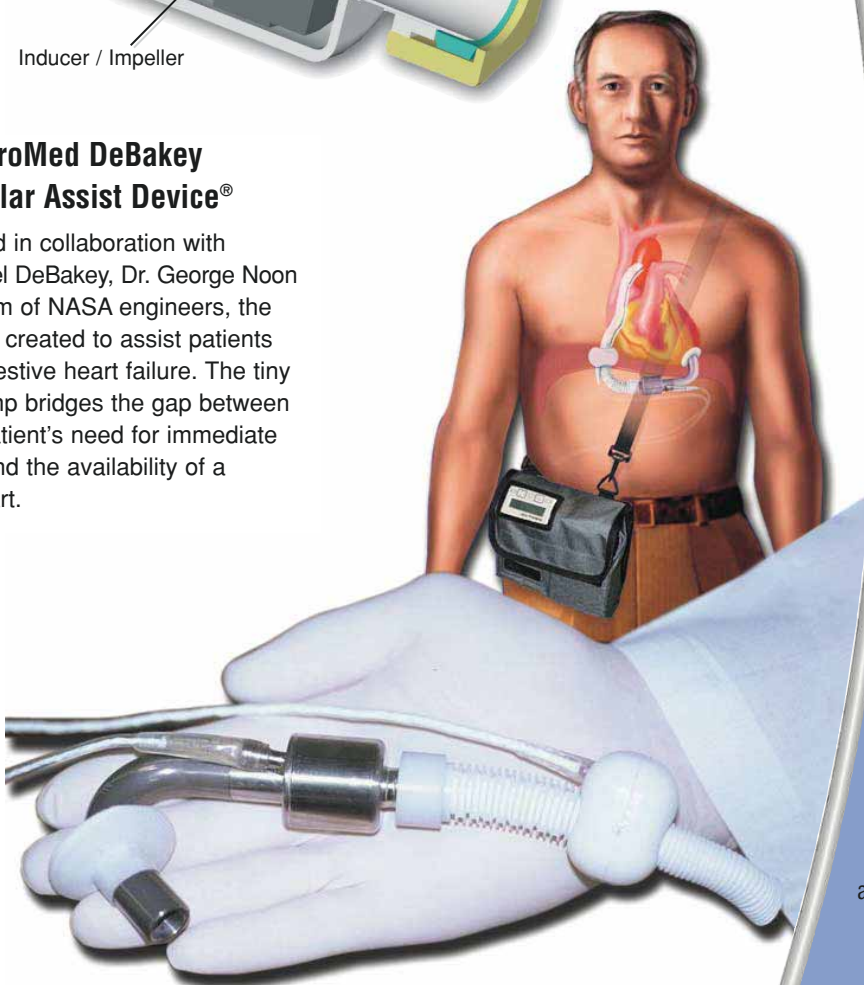
The Technology Outreach Program (TOP) helps apply technology developed for space exploration to small businesses. The goal is to accelerate the transfer of these technologies to the marketplace by matching businesses with space industry technical teams made up of TOP's partners. These teams analyze the technical challenges posed, and then tap into the universe of technology that has been created for space exploration. The program provides up to 40 hours of engineering assistance at no cost to the business seeking the technical assistance.





The MicroMed DeBakey Ventricular Assist Device®

Developed in collaboration with Dr. Michael DeBakey, Dr. George Noon and a team of NASA engineers, the VAD® was created to assist patients with congestive heart failure. The tiny blood pump bridges the gap between a heart patient's need for immediate support and the availability of a donor heart.



Engineering Excellence at NASA's White Sands Test Facility

White Sands Test Facility (WSTF) is JSC's state-of-the-art research and testing site in Las Cruces, New Mexico. The WSTF capabilities for space-simulated vacuum firings of solid and liquid rocket propulsion systems are among the best in the nation, and the sophisticated laboratories for evaluating potentially hazardous materials and components for both Earthly and aerospace applications are similarly outstanding.

WSTF team members test rocket engines, resolve space mission anomalies and investigate new materials and components. They also refurbish space shuttle propulsion and life support system components for reflight, design and fabricate spaceflight hardware, and perform tests to validate new components that will enhance mission safety and extend the operational life of existing spacecraft systems.

In addition to the work done there for NASA, including all the other NASA field Centers, many other fascinating and challenging test projects are conducted by WSTF for its customers such as the U.S. military, other U.S. government agencies and private industry.

